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ABSTRACT

This booklet is designed for developing performance and competency-based student materials (PACs). The PAC, an instructional tool that focuses on helping students master a specific objective, lends itself to vocational instruction. The first nine sections of the guide, consisting of information to assist teachers in gathering background materials for the development of a PAC, address the following topics: program descriptions, occupational competencies, program blocking, task listing sheets, task detailing sheets, general and specific performance objectives, and evaluation of general and specific objectives, (including samples). The final three sections contain guidelines for assembling the PAC, specifically: (1) the introduction to the individual learning PAC; (2) written instructions for the learning activities designed to meet the specific objectives and lists of needed resources; and (3) resource sheets (sheets used for general information, self checks, diagrams, project procedures, fact sheets, etc.). Appended to the guide are a glossary, a curriculum organizational chart, and a list of action verbs for use in introducing competencies or tasks. (MN)

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how to develop PACs

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And

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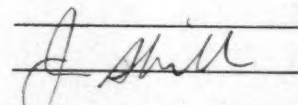
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DEVELOPING INDIVIDUAL LEARNING PACS

Rationale

There exists a need in all educational settings to produce materials that meet the students' needs. The **PAC** has been designed to help teachers develop student materials. Development of **PACs** does not in itself mandate individualized instruction. The **PAC** could be used as a vehicle in an individualized program. Even so, the primary design consideration of the **PAC** is to help support and enhance existing teaching strategies.

The **PAC** lends itself ideally to vocational instruction. By developing a student **PAC**, the teacher has a tool that can be used to better equip the student for mastery of specific objectives. The flexibility of resources offered by the **PAC** is not available from any other single source. This flexibility allows the teacher to custom design a **PAC** to meet students' individual needs.

The **PAC** teaches more than subject matter. Through use of a **PAC**, the student learns self-discipline, self-direction, and budgeting of time, as well as mastery of the material. Basically, the student is learning how to learn by using the independent resources of the **PAC**.

Introduction

This booklet has been designed to help you develop individual learning **PACs** for your students. The **PAC** is an information source that directs the student to available materials to become competent in performance of specific objectives. **PACs** vary in length and contain all the information necessary to achieve the objective. It is recommended that the length of the **PAC** be limited to encourage student use.

This booklet is divided into an introduction and twelve sections. Nine of these sections will assist you in gathering background materials for the development of the **PAC**. The last three sections will assist you in developing the student's part of the **PAC**.

Procedure

The steps for developing **PACs** are as follows:

1. Develop a program description from an analysis.
2. Determine occupational competencies.
3. Group like competencies (unit).
4. List tasks for each competency.
5. Analyze tasks, listing the doing and knowing steps.
6. Write a general performance objective for each competency.
7. Write specific performance objectives for tasks.
8. Develop an evaluation instrument for each task (specific performance objective) and competency (general performance objective).
9. Compile the student **PAC** using above data.
 - a. **PAC** for each competency.
 - b. Segment for each task.
10. Gather resource materials to support each task.

NOTE: If your program has been in existence for some time, competencies and objectives may have already been written. If so, you may begin with step 9 and develop student **PACs** around established competencies.

Sample forms for **PAC** development are presented with an explanation of each form. Forms A through H are to be used as data gathering sheets and are not to be used as part of the **PAC** which is given to the student. Only **PAC Forms 1, 2, and 3** are to be part of the student **PAC**.

FORM A Program Description

An occupational analysis describes what people do in a particular occupation and the conditions under which they work. Built on this analysis is the program description. This description serves as a guide for the program. There should be one program description for each program. It may include exit points within a program. Check with your director to see if a description has already been written.

Before the program description is written, several important points should be considered:

1. Obtain an occupational description from three or four different employers. Compare these with the program description written and the **Dictionary of Occupational Titles**. Note competencies

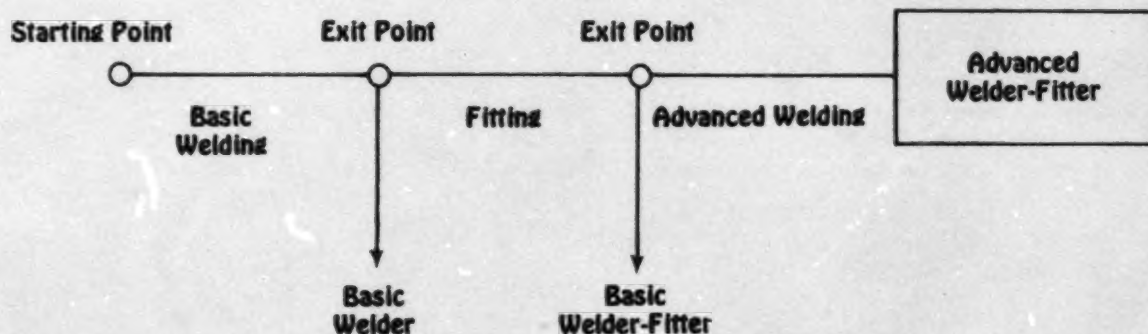
required for entry into the occupation.

2. Determine the exit points that may be a part of the program. You may wish to write separate descriptions for each of these exit points and include them as a part of the program description.

Write your program description on **FORM A**. Organize your notes and data before you begin. The program description should indicate:

1. **Who** is to be taught.
2. **What** they are to be taught.
3. What **degree of skill** is to be attained.
4. **Where** the training is to be used.
5. General **employment conditions**.

ADVANCED WELDER-FITTER PROGRAM



PROGRAM DESCRIPTION

OCCUPATION: _____

PROGRAM TITLE: _____

PROGRAM	SCHOOL	DATE

FORM A

FORM B Competencies

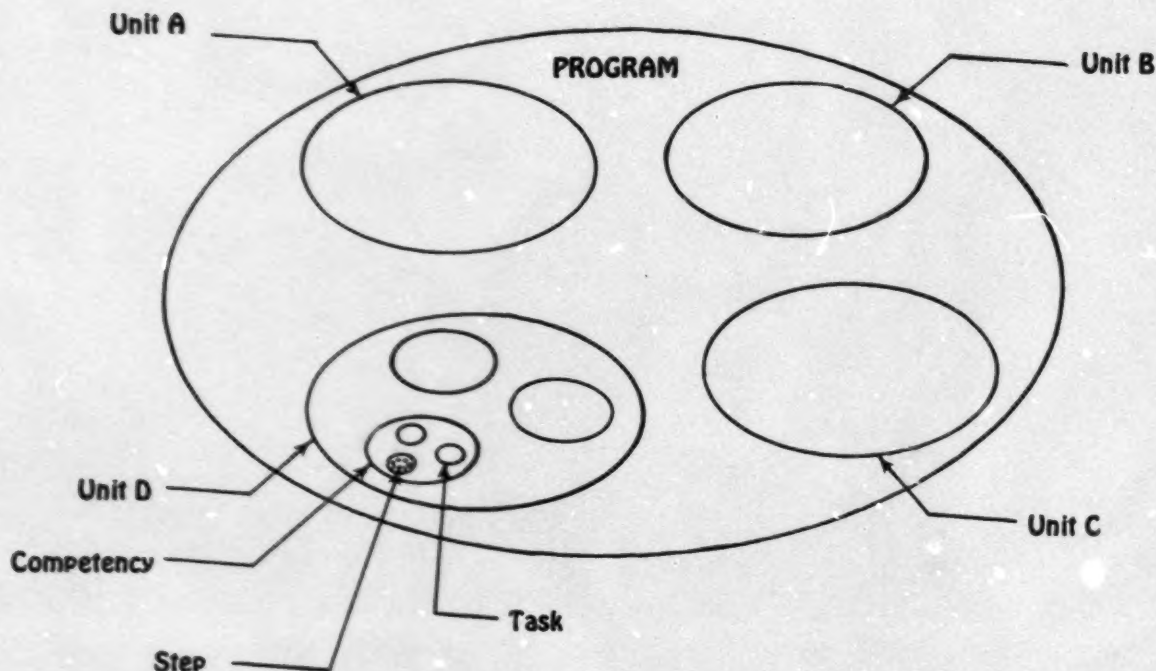
Each occupation is broken down into the competencies a person performs in the occupation. Competencies state what a person is able to do and are both observable and measurable. They are written in phrase form, begin with an action verb, and are descriptive of activities used and understood by industry. Check with your director to see if this has already been done. In order to determine these competencies, follow these procedures:

1. Think through the occupation, noting what a person must be able to do on the job. List these competencies on a sheet of paper.
2. Review the competency list, adding, deleting, or combining, as necessary. Study the **Action Verb**

List, Appendix C, for help in stating competencies. Be sure your competencies are stated in the language of the occupation. Programs have identified, on the average, around 50 competencies for a year's program. The total number of competencies varies between programs and is dependent upon the characteristics of programs.

3. Group like competencies together. Write a title for each **group** of competencies. This group of competencies is called a **unit**. Enter the group of competencies on Form B. On the bottom on the form, enter the program, school name, and date.

RELATIONSHIP OF TERMS



OCCUPATIONAL COMPETENCIES

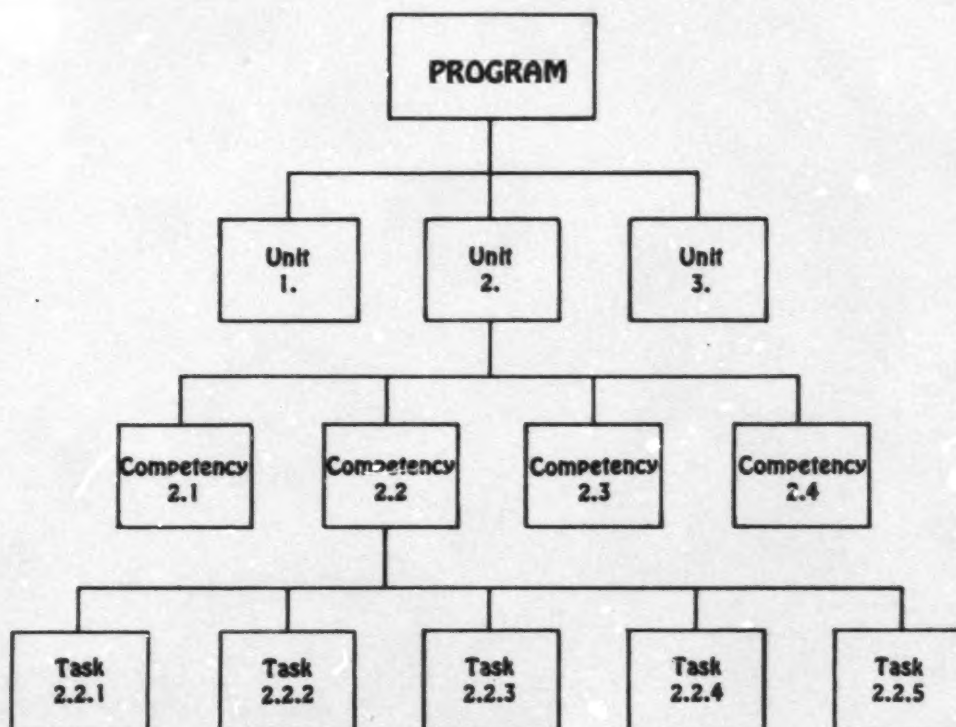
PROGRAM	SCHOOL	DATE

FORM B

FORM C Program Blocking

Program blocking is a visual representation of the occupation. The diagram includes unit and competency blocks. Each block representing a competency will be developed into an individualized learning **PAC**. Check with your director to see if this blocking has already been done. To develop the course blocking, follow these steps:

1. Study the program unit and competency list (**Form B**). The unit titles and competencies are to be written into the appropriate blocks. Remember that each competency will be developed into a **PAC**. A competency may be reinforced or further developed in subsequent **PACs**.
2. Use **Form C** to block your pro-
- gram.
3. Number units in consecutive order, then number the blocks under each unit in consecutive order. This will serve as an identification system only. Combine these numbers, placing the unit number to the left of the decimal and the competency or **PAC** number to the right of the decimal. You may wish to assign numbers to each of the segments of the **PAC** later.
4. Assign these numbers to each of the **PACs**.
5. On the bottom of the form write the program, school name, and date completed.



PROGRAM BLOCKING

UNIT TITLE: 1	REMARKS:
COMPETENCIES: <u>1.1</u> _____ _____ _____ _____ _____ _____	

UNIT TITLE: 2	REMARKS:
COMPETENCIES: <u>2.1</u> _____ _____ _____ _____ _____ _____	

PROGRAM	SCHOOL	DATE

FORM C

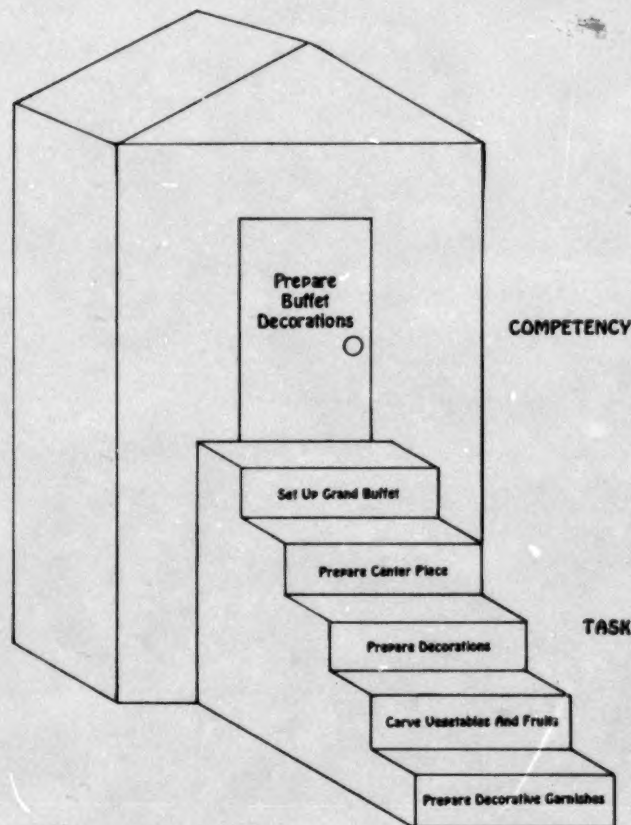
FORM D Task Listing Sheet

Each competency is composed of one or more tasks. Tasks are the smallest unit of useful work that has a definite beginning and end point and serves a useful purpose. Like competencies, tasks state what a person is able to do, are both observable and measurable, and begin with an action verb. Each **segment** of an individual learning **PAC** is based on a task. Tasks must be identified. Check to see if tasks have been identified. To develop the tasks, follow these steps:

1. Using **Form D**, write the unit num-

ber and title on the first line. On the second line, write the competency number and title. Break down the first competency you have listed on **Form B** into tasks. Write the tasks in sequence on **Form D** under the titles, "Tasks."

2. On the bottom of **Form D**, enter the name of the program, the name of the school, and date.
3. Complete a **Form D** for each competency.



TASK LISTING SHEET

UNIT NO. _____

COMPETENCY NO. _____

TASKS

PROGRAM	SCHOOL	DATE

FORM D

FORM E Task Detailing Sheet

Each task is to be broken down into the sequential steps a person would take in order to complete **one** of the tasks listed on **Form D, Task Listing Sheet**. These steps should be written in concise terms. In order to accomplish this, follow these steps:

1. Study a **Form E**, Task Detailing Sheet. Each action step in performing a task is listed in the "Doing" column. The "Knowing" column lists what a person **must** know to perform the "Doing" steps. For each of the "Doing" steps, there may be one or more "Knowing" items.
2. Break down the first tasks shown on **Form D** by listing the sequential "Doing" steps. List these "Doing" steps in the left hand column of **Form E**.
3. Then determine what a person must know in order to do each of these steps and list these "Knowing" items in the right hand column of **Form E**.
4. Complete a **Form E** for each of the tasks listed on the **Form D, Task Listing Sheet**, in sequence as follows:
 - a. Enter the competency number and name on the first line.
 - b. Enter the task number (if there is one) and name on the second line.
 - c. Enter the "Doing" steps for the task.
 - d. Enter the corresponding "Knowing" steps for each task.
 - e. Enter the program name, school name, and date.

TASK DETAILING SHEET

COMPETENCY NO. _____

TASK NO. _____

STEPS IN PERFORMING THE TASK

DOING

KNOWING

PROGRAM

SCHOOL

DATE

FORM E

FORM F

General and Specific Performance Objectives

A performance objective tells students what they will be able to do when they have satisfactorily completed the learning activities prescribed in the **PAC** or segment. Each performance objective includes three parts:

1. **CONDITIONS:** The first part of the performance objective tells students the conditions which will exist when they perform the competency or task. The conditions may include the tools, equipment, and materials or resources which will be available to them. Generally the word "Given" introduces the phrase which lists the conditions.
2. **PERFORMANCE:** The second part of the performance objective tells students what they will be able to do, i.e., the competency or task. Generally the phrase which contains the desired performance begins with the words "you will be able to," or "you will."
3. **EXTENT:** The third part of the performance objective tells students **how well** they are to perform the competency or task. It will tell them the standards by which their performance will be evaluated.

A general performance objective is written for each competency listed on **Form B**. A specific performance objective is written for each task listed on **Form D**. Complete a **Form F** for each competency listed on **Form B**. Complete each part of the form in the following manner:

1. Write the general performance objective for the competency.
2. Write a specific performance objective for each task listed under the competency.
3. Enter the program name, school name, **PAC** (competency) number, and date completed.

COMPETENCY--

PREPARE BUFFET DECORATIONS

TASKS--

PREPARE DECORATIVE GARNISHES

CARVE VEGETABLES AND FRUITS

PREPARE DECORATIONS

PREPARE CENTER PIECE

SET UP A GRAND BUFFET

GENERAL PERFORMANCE OBJECTIVE--Given utensils, equipment and ingredients you will be able to *PREPARE BUFFET DECORATIONS* to American Culinary Federation Standards.

SPECIFIC PERFORMANCE OBJECTIVE--Given utensils, equipment and ingredients you will be able to *PREPARE DECORATIVE GARNISHES* to American Culinary Federation Standards.

GENERAL PERFORMANCE OBJECTIVE FOR THE COMPETENCY

SPECIFIC PERFORMANCE OBJECTIVES FOR THE TASKS

PROGRAM	SCHOOL	DATE

FORM F

FORMS G AND H

Evaluation for the General and Specific Performance Objectives

After the objectives are written, the evaluation instrument is developed. This instrument will determine if the student has met the objective. The performance objectives state what a student will be able to do. The evaluation measures the student's ability to perform the task or competency stated in the objective. This evaluation is commonly called a performance test. Each general and specific per-

formance objective must be evaluated. The *to-what-extent* part of the objectives on **Form F** will aid you in developing the evaluation. Write your evaluation on **Forms G and H**. These may be combined later into an overall evaluation. Write the program name, school name, **PAC** (competency) number, and date on the bottom of each form.

EVALUATION FOR THE GENERAL PERFORMANCE OBJECTIVE

PROGRAM	SCHOOL	PAC	DATE

FORM G

EVALUATION FOR THE SPECIFIC PERFORMANCE OBJECTIVE

PROGRAM	SCHOOL	PAC	DATE

FORM H

PAC FORM 1

PAC Introduction

You are now ready to assemble the **PAC**. You will use the raw data you have gathered to develop the **PAC**. A **PAC** is a vehicle which directs students through sequential learning activities and resources to meet the general and specific performance objectives. This is the first sheet students see. It tells them what they will be able to do when they complete the **PAC**; how long it may take them; and where this **PAC** fits into the preparation for their occupation. The words you use should be meaningful to students. Complete the following steps in writing the **PAC** introduction:

1. Estimate the approximate time to complete the **PAC**.
2. Enter the name of your program.
3. Enter the unit title from the **Form C, Program Blocking**.
4. Enter the competency which is to be developed by use of this **PAC** from the **Form B, Competency List**.
5. Write the purpose of the **PAC**. The purpose, which is a motivational statement, should include three things:
 - a. A statement of what students are already able to do. This might state what prerequisite **PACs** students must successfully complete before they begin this **PAC**. (Past)
 - b. A statement of what students will be able to do when they complete this **PAC**. (Present)
 - c. A statement of what students will be able to do with the competency they developed in this **PAC**. This might state why this competency is necessary in industry. (Future)
6. Enter the general performance objective you wrote for the competency on **Form F** at the place indicated on **PAC Form 1**.
7. Note the statement regarding testing through. If students successfully meet the required performance of an evaluation, they should be certified competent and need not work through this **PAC**.
8. Enter the unit and **PAC** numbers, the number of segments in the **PAC**, the school name, and the date.

STUDENT NAME _____ GRADE _____ DATE _____

TIME TO
COMPLETE (ESTIMATED) _____ (ACTUAL) _____

INDIVIDUAL LEARNING PAC

PROGRAM:

UNIT TITLE:

COMPETENCY:

PURPOSE:

GENERAL PERFORMANCE OBJECTIVE:

SEE YOUR INSTRUCTOR FOR TESTING THROUGH

UNIT	PAC	NUMBER OF SEGMENTS	SCHOOL	DATE

PAC FORM 1

PAC FORM 2

Learning Activities and Resources

This form is the heart of the individualized instruction process. Its purpose is to provide learning activities and resources to help students meet a specific objective. It is important that the learning activities meet the following requirements:

1. Be directly related to the meeting of the objective.
2. Be listed in the logical progression of learning.
3. Be clearly understood by students and written in a vocabulary they can understand.
4. Tell the students what they are to do and why they are to do it.
5. Are presented in such a way that they motivate students to learn.

The better the learning activities are written, the easier it will be for students to learn. If the learning activities are poorly written, students may become confused as to what they are to do, waste time trying to figure out what is being communicated, or spend needless time asking questions concerning meaning. Follow these steps in completing the learning activities sheet:

1. Enter the specific objective for the unit at the top of **PAC Form 2**.
2. Determine the learning activities which students will need to accomplish in order to meet the objective. Design and sequence learning activities which will lead students to the successful performance of the objective. Learning activities may direct students to do one or more of the following:
 - a. Gain familiarity with the task to be performed.
 - b. Acquire knowledge necessary for the performance of the task.
 - c. Observe how the task is to be performed.
 - d. Ask questions about procedures.
 - e. Perform the task specified.
 - f. Take a test on information they need to know before they perform the task.
3. List the resources which students will use to complete each learning activity. This information should inform specifically where they can find the resource. It is important that students be able to easily locate the resources. When resources are not properly identified, students may waste time trying to locate information. Resources may include the instructor, printed reference materials, AV materials, or instructor-developed materials.
4. Complete the information at the bottom of the sheet. Begin each learning activity sheet for each segment with page 1.
5. Write a learning activity sheet (**PAC Form 2**) for each specific objective.

SPECIFIC PERFORMANCE OBJECTIVE:				
LEARNING ACTIVITIES:				RESOURCES:
UNIT	PAC	SEGMENT	PAGE	SCHOOL

PAC FORM 2

PAC FORM 3

Resource Sheet

This sheet is used for general information, self checks, diagrams, sketches, job sheets, project procedures, fact sheets, etc. The resource sheet should be properly identified on the learning activity sheet. Each new resource referred to should have a new resource sheet number. Thus resource sheet number 1 may consist of several pages as long as it deals with the activity stated on the learning activity sheet. Under the heading, Resource Sheet # _____, you should enter the title of the material you are presenting. Complete the information at the bottom of the sheet. Existing materials may be labeled to reflect the resource sheet numbering.

RESOURCE SHEET # _____

UNIT	PAC	SEGMENT	PAGE	SCHOOL

PAC FORM 3

APPENDIX A

Glossary of Terms

Course: A specified block of training for an occupation. It is composed of entry-level, industry-based competencies. A course may be part of a program, or the program may be an entity in itself. Basic electricity, digital, and communications are courses within an electronics program. Auto body repair, on the other hand, is a program. For use here, course and program are interchangeable terms.

Competency (Form B): A competency is a knowledge, skill, or judgment which the learner will demonstrate at a pre-determined level. Generally a competency will take an average student approximately one week to achieve. However, some competencies, because of their uniqueness, may take a much longer or shorter time to achieve. Competencies are clusters of skills required for an entry-level position in industry and form the basis upon which the student will be evaluated or graded. Each competency will be developed into an individual learning **PAC**. In some cases, competencies may be built on previously developed competencies or tasks. Example of a competency: *Prepare buffet decorations.*

Evaluation (Forms G & H): A process of measuring (testing) a student's ability to meet a performance objective which is based on a competency or task. The evaluation may take place either before or after training.

Exit Point: A limited occupation within a program which can be developed within a shorter period of time and is based on fewer competencies. Example: *Fry Cook is an exit point of the Cook/Chef program.*

Learning Activities (PAC Form 2): A process whereby a student acquires the knowledge and develops the ability to perform a particular task and/or meet a performance objective. It may direct a student to practice, listen, observe, read, study, perform, reason (problem solve), test, etc.

Occupational Analysis: A systematic breakdown of an occupation into its component parts for a specific purpose. Our purpose is for curriculum development. Other purposes could include equipment list, facilities, etc.

PAC: A vehicle which directs students through sequential learning activities and resources. This will enable students to develop their abilities to perform a competency and its tasks and to meet a general and specific performance objective. The instructor's role is that of an enabler, a leader, a guide, and a resource to the students as they work through a **PAC**.

PAC Numbering: A numbering system based on units, **PACs**, and in some cases, segments. Example: **PAC 03.04.06** would refer to **Unit 3, PAC 4, and Segment 6.**

Performance Objective (Form F): A performance objective tells students what they will be able to do when they satisfactorily complete the learning activities prescribed in the **PAC** or segment. Each performance objective includes three parts: (1) conditions (the situation which will exist or the resources which will be provided); (2) performance (what students will be able to do, i.e., the competency or task); (3) extent (the quality, quantity, and/or standard by which stu-

dents' abilities to perform will be evaluated). Competencies are written as the performance part of a general performance objective; tasks are written as the performance part of a specific performance objective. An example of a performance objective is as follows: *Given utensils, equipment, and ingredients, you will be able to prepare buffet decorations to American Culinary Federation standards.*

Program: A specific block of training for an occupation. It is composed of entry-level, industry-based competencies. A program may or may not include two or more courses. For instance, auto body repair is a program; basic electricity, digital, and communications are courses within an electronics program. For use here, program and course are interchangeable terms.

Program (course) Description (Form A): Denotes what students do in a particular occupation and the conditions under which they work. It may also include exit points which require less time and/or ability to develop. The program description should include: (1) who is to be taught; (2) what they are to be taught; (3) what degree of skill is to be obtained; (4) where the training is to be used; and (5) what the general employment conditions are to be.

Program Blocking (Form C): A graphic representation of the division of a program into units and competencies (**PACs**). It includes the numbering of units and **PACs**.

Purpose (PAC Form 1): A statement which helps to motivate students to begin a **PAC**. It tells students: (1) what they are already able to do; (2) what they will be able to do when they complete the **PAC**; and (3) how the skills they have developed will be of value to them in the future.

Resources (PAC Forms 2 & 3): Materials, equipment, tools, and personnel which assist students in accomplishing a learning activity.

Segment (PAC Form 2): A group of learning activities and resources which enable students to develop the required skills to complete a task and to meet a specific performance objective.

Task (Form D): Tasks are entry-level skills which must be accomplished to develop a competency. Each competency consists of one or more tasks. Like competencies, tasks state what a person is able to do. Tasks are both observable and measurable. Tasks are the smallest unit of useful work that has a definite beginning and end point and serves a useful purpose. Each task is to be developed into a segment of an individual learning **PAC**. Examples of tasks for the competency, "Prepare buffet decorations:" *Prepare decorative garnishes, carve vegetables and fruits, prepare decorations, prepare centerpieces, and set up a grand buffet.*

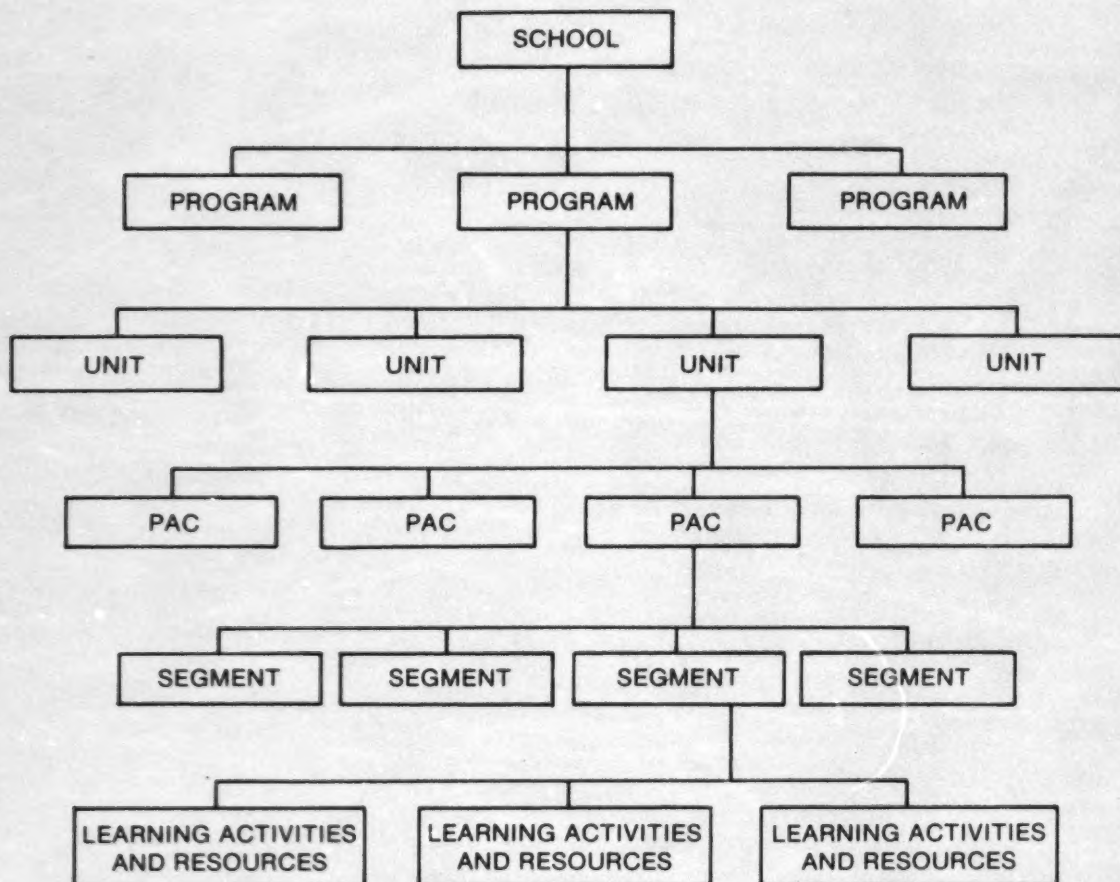
Task Detailing (Form E): An analysis procedure which requires the listing of doing steps along with the required knowledge in order to accomplish a task.

Testing Through: An evaluation or assessment of a student's abilities to meet a general or specific performance objective through prior training and/or experience. The satisfactory completion of the evaluation eliminates the student's

need to work through a **PAC** or segment. When students prove their ability to meet the general performance objective, they are given credit for meeting the objective and are ready to proceed to the next general performance objective and **PAC**. The performance test, **Form G**, may serve as the instrument for testing through.

Unit: A major division of a program which consists of a group of **PACs**.

APPENDIX B
CURRICULUM ORGANIZATION CHART



APPENDIX C

Action Verbs

Carefully chosen "action" verbs, used to introduce each competency or task, will help students understand precisely what is expected of them. The list below includes sample "action" verbs. Some of them may be appropriate for competencies or tasks you want your students to learn.

activate	duplicate	prepare	transfer
adjust	enumerate	prescribe	troubleshoot
align	estimate	produce	tune
analyze	examine	press	turn
apply	explain	pull	turn off-on
arrange	fill	push	type
assess	form	quote	use
assist	formulate	read	utilize
associate	grasp	recall	validate
balance	group	recite	verify
breakdown	hold	record	write
calculate	hone	reiterate	
categorize	identify	remove	
change	illustrate	repair	
choose	indicate	repeat	
cite	insert	replace	
classify	interpret	reply	
close	label	reproduce	
combine	layout	respond	
compare	letter	re(state)	
complete	lift	rotate	
compute	list	say	
construct	listen	select	
contrast	load	separate	
convert	locate	sequence	
copy	loosen	serve	
count	make	set	
create	manage	show	
critique	manipulate	signal	
cut	measure	slide	
define	modify	solve	
describe	move	speak	
demonstrate	name	specify	
design	open	state	
detect	operate	stencil	
determine	order (arrange)	subdivide	
develop	organize	synthesize	
diagram	outline	tabulate	
differentiate	perform	tell	
(dis)assemble	pick-up	test	
(dis)connect	place	tighten	
display	plan	touch	
distinguish	point	trace	
draw	predict	transcribe	